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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,005	10/12/2001	Levent Demirekler	14573MDUS01U	2651
34845	7590	04/21/2004	EXAMINER	
STEUBING AND MCGUINNESS & MANARAS LLP			HAROLD, JEFFEREY F	
125 NAGOG PARK			ART UNIT	
ACTON, MA 01720			PAPER NUMBER	
			2644	8

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,005

Applicant(s)

DEMIREKLER ET AL.

Examiner

Jefferey F Harold

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 04 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-31 is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☒ Claim(s) 2-8 and 10-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. ***Claims 1, 9 and 17*** are rejected under 35 U.S.C. 102(b) as being anticipated by Yatrou et al. (United States Patent 5,343,522), hereinafter referenced as Yatrou.

Regarding **claim 1**, Yatrou discloses an adaptive sparse echo canceller using a sub-rate filter for active tap selection. In addition, Yatrou discloses a process for canceling an echo component of a received signal, the process consists of:

detecting the active regions of an echo channel impulse response, as disclosed at column 3, lines 37-62 and exhibited in figure 3;

filtering only the portions of the signal corresponding to the active regions of the echo channel impulse response using a first set of filter coefficients to cancel the echo component of the received signal, as disclosed at column 3, line 62 through column 4 line 56 and exhibited in figure 3.

Regarding **claims 9 and 17**, Yatrou discloses everything claimed, in addition, claims 9 and 17 are interpreted and thus rejected for the reasons set forth above in the rejection of claim 1.

Allowable Subject Matter

2. ***Claim 2-8 and 10-16*** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

3. The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claim 2**, Yatrou discloses computing an estimate of the echo channel impulse response, however, the prior art of record failed to disclose or fairly suggest using a number of short finite impulse response filters represented by a second set of filter coefficients for computing an average error for each short finite impulse response filter, and identifying up to L short finite impulse response filters having a lowest average errors, where L is a predetermined maximum number of reflections tracked by the echo canceller.

Regarding **claim 10**, Yatrou discloses wherein the active tap detection logic is operably, however, the prior art of record fails to disclose or fairly suggest computing an estimate of the echo channel impulse response using a number of short finite impulse response filters represented by a second set of filter coefficients computing an average error for each short finite impulse response filter, and identify up to L short predetermined maximum number of reflections tracked by the echo canceller.

4. ***Claims 18-31*** are allowed.

5. The following is an examiner's statement of reasons for allowance:

Regarding **claim 18**, Yatrou discloses a method for canceling an echo component of a received signal, the method comprising: detecting active regions of an echo channel impulse response; and filtering the signal corresponding to the active regions of the echo channel impulse response using a first set of filter coefficients; however, the prior art of record fails to disclose or fairly suggest computing an estimate of the impulse response using a number of short finite impulse response filters represented by a second set of filter coefficients and computing an average error for each short finite impulse response filter; and identifying up to L short finite impulse response filters having a lowest average errors, where L is a predetermined maximum number of reflections tracked by the echo canceller.

Regarding **claim 22**, Yatrou discloses a method for canceling an echo component of a received signal, the method comprising: detecting active regions of an echo channel impulse response; and filtering the signal corresponding to the active regions of the echo channel impulse response using a first set of filter coefficients; however, the prior art of record failed to disclose or fairly suggest computing a first average error using all reflections modeled by the first set of filter coefficients; computing a second average error using all reflections modeled by the first set of filter coefficients; removing the lowest power reflection from the first set of filter coefficients if the second average error is smaller than the first average error.

Regarding **claim 25**, Yatrou discloses an echo canceller comprising active tap detection logic operably coupled to filter the signal corresponding to the active regions of the echo channel impulse response using a first set of filter coefficients, track the

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change in the location of each reflection using a first set of filter coefficients, and detect active regions of the echo channel impulse response using a second set of filter coefficients, however, the prior art of record fails to disclose or fairly suggest wherein the active tap detection logic is operably coupled to compute an estimate of the echo channel impulse response using a number of short finite impulse response filters represented by a second set of filter coefficients, compute an average error for each short finite impulse response filter, and identify up to L short finite impulse response filters having a lowest average errors, where L is a predetermined maximum number of reflections tracked by the echo canceller.

Regarding **claim 29**, Yatrou discloses an echo canceller comprising active tap detection logic operably coupled to filter the signal corresponding to the active regions of an echo channel impulse response using a first set of filter coefficients, track the change in the location of each reflection using a first set of filter coefficients, and detect active regions of the echo channel impulse response using a second set of filter coefficients, wherein the active tap detection logic is operably coupled to compute a first average error using all reflections modeled by the first set of filter coefficients, however, the prior art of record fails to disclose or fairly suggest computing a second average error using all reflections modeled by the first set of filter coefficients except the lowest power reflection, and remove the lowest power reflection from the first set of filter coefficients if the second average error is smaller than the first average error.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

6. Applicant's arguments filed January 4, 2004 have been fully considered but they are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferey F Harold whose telephone number is 703-306-5836. The examiner can normally be reached on Monday - Friday 9-5:30.

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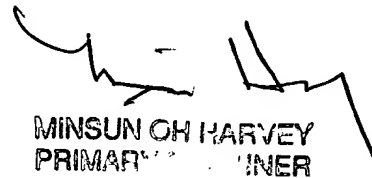
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JFH

April 14, 2004



MINSUN OH HARVEY
PRIMARY EXAMINER